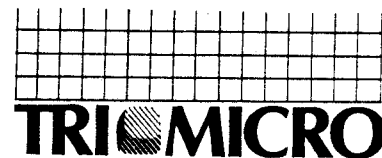# PLUS EXCHANGE

NEWSBRIEFS AND UPDATES

IS THE PLUS EXCHANGE VIABLE?

Contrary to popular opinion, we have not died! To say that the demands of the Plus 4 community have been overwhelming is an understatement. When we first began to offer support and product and contemplated this newsletter, there were between 40,000 and 60,000 machines sold in the United States. We only knew of the existence of 3,000 of these users. Since that time, Commodore has been liquidating both Plus 4 and C-16 computers through companies like Urban General 1 C.O.M.B. and through land developers who are , ering the systems as premium items. Our recent yalty accounting shows that there are now approximately 150,000 machines in use in the United States. Our own list of users in terms of people who have either written us or called us has grown to 25,000 people. These 25,000 people have been referred to us for everything -- where to purchase hardware, compatibility problems with modems and printers, problems with specific applications and the built-in software, availability of books which Commodore has never published, where to get software, problems with software they already own even if they didn't buy the software from us and even if the software is not of our making, specific pin-out compatibility and schematics, repairing hardware, should they purchase a Plus 4, etc., etc. We are so inundated with questions that I sometimes feel that Commodore tells anyone who inquires, "Is the sky blue?" to call Tri Micro.

Now, you may be saying to yourself, "Well, that's great! 25,000 people all paying yearly subscriptions -- you should be able to develop new software and produce this newsletter regularly no sweat." Not quite! We have only 2,000 paying Plus Exchange embers, quite a few of whom paid at the old quarterly te of $10.00 per quarter and have not been rebilled nce we have fallen behind in our scheduling. We nave, therefore, had to bootstrap this organization with a budget of approximately $25,000.

The momentum has increased at such a pace that we have been able to do two things: (1) Build a reserve from the Plus Exchange business; (2) Allocate funds from our C-64 / C-128 / Atari business to add to this reserve. With this new budget allocation, we have added three staffers and contracted some software reviews, the first of which appear in this issue. I am now confident that we will be able to produce the newsletter every six weeks, beginning with this issue. The response to written correspondence should be faster, however, do not expect the unreasonable. Much of the time, your questions require that someone actually spend some time building case situations as you describe them to test the problem and attempt a diagnosis.

I know the frustration level must be high for some of you, especially those of you who have paid your money to be members. Please understand that it is in your best interest that we try to serve even non-paying members at least for a time in order to keep the user base large and ensure continuing information and development. Remember what if felt like to be out in the cold with no one to turn to for answers? Initially, anyway, we just don't feel right turning someone away who has a legitimate problem and the increased volume of requests was really taxing. To those of you who wrote despairing letters, MEA CULPA, MEA CULPA, MEA CULPA! To all of you, thanks for your continued patience and support.

WHERE'S THE SOFTWARE?

Some of you are still waiting for Commodore software titles. We are filling them as we get product in, unfortunately, we get little dribbles of product straggling in and it is rarely enough to completely bring our backorders current. Commodore shipped much of the software to the United Kingdom for liquidations and bundled promotions, in addition to the software being provided to liquidators here. Once this software has been completely sold, Commodore will not be reproducing the software.

PLUS/4 SOFTWARE PRICE LIST
(Aug. 1985 superceeds all others)

STOCK NO	DESCRIPTION	CHARTER MEMBER PRICE	REGULAR MEMBER PRICE	SUGGES RETAIL PRICE
	TRI MICRO TITLES			
TM3503	Plus Graph......................	15.97	24.97	29.95
TM8401	Rug Rider.......................	11.97	15.97	19.95
TM3504	Plus Extra......................	14.97	14.97	14.97
TM8405	Ghost Town......................	11.97	15.97	19.95
TM4304	Easy Tutor......................	8.97	11.97	14.97
PD4001	Math Games and Word Problems.......	4.97	7.97	9.95
PD4002	Maze Mania......................	4.97	7.97	9.95
PD4003	Super Spell.....................	4.97	7.97	
	ACADEMY SOFTWARE TITLES			
AC11001D	Typing Tutor & Word Invaders (DISK)	19.95	22.45	24.95
AC11001T	Typing Tutor & Word Invaders (TAPE)	17.55	19.75	21.95
AC11002D	IFR Flight Simulator (DISK)........	23.95	26.95	29.95
AC11002T	IFR Flight Simulator (TAPE)........	23.95	26.95	29.95
	COMMODORE SOFTWARE TITLES			
TC301	Typing Professor.................	13.98	16.98	19.98
TC500	Micro Illustrator...............	20.98	25.48	29.98
TC600	Questprobe (The Hulk)...........	27.98	33.98	39.98
TC601	Cutthroats......................	27.98	33.98	39.98
TC602	Suspect.........................	27.98	33.98	39.98
T112001	Script Plus....................	52.48	63.73	74.98
T112003	Calc Plus......................	52.48	63.73	74.98
T112004	Experiences In Software...........	13.98	16.98	19.98
T112005	Money Decisions/Loans...........	20.98	25.48	29.98
T112006	Money Decisions/Investments.....	20.98	25.48	29.98
T112007	Starter Productivity Softwre.......	20.98	25.48	29.98
T113007	Easy Match/Easy Count...........	17.48	21.23	24.98
T113008	What's Next Letters/Numbers........	17.48	21.23	24.98
T113009	Letter Match More/Less..........	17.48	21.23	24.98
T113010	Letter Sequences/Long & Short......	17.48	21.23	24.98
T113011	Shapes & Patterns/Group It.........	17.48	21.23	24.98
T116001	Viduzzles......................	23.98	26.98	29.98
T116002	Jack Attack Almanack............	20.98	25.48	29.98
T116003	Wizard Of Wor..................	23.98	26.98	29.98
T116004	Pirate Adventure...............	16.78	20.38	23.98
T116005	Atomic Mission.................	23.98	26.98	29.98
T116006	Strange Odyssey................	20.98	25.48	29.98
T116009	Mindbenders....................	23.98	26.98	29.98
T232001	Financial Advisor..............	31.48	38.23	44.98
T232007	Loans & Investments............	35.98	40.48	44.98
T232008	Business Management and Statistics.	34.98	42.48	49.98
T262006	General Ledger.................	52.48	63.73	74.98
T262007	Accounts Receivable............	52.48	63.73	74.98
T262008	Accounts Payable...............	52.48	63.73	74.98
T262009	Inventory......................	52.48	53.73	74.98
T262010	Payroll........................	52.48	53.73	74.98
T262011	Construction Industry..........	17.48	21.23	24.98
T262012	Personal Finance Planning......	17.48	21.23	24.98
T262013	Retail Industry................	17.48	21.23	24.98
T262014	Wholesale Industry.............	17.48	21.23	24.98
T262015	Manufacturing Industry.........	17.48	21.23	24.98
T262016	Professional Services..........	17.48	21.23	24.98
T262017	Maintenance and Service........	17.48	21.23	24.98
T263001	Logo...........................	52.48	63.73	74.98
T263010	Reading Professor..............	41.98	50.98	59.98
T266001	Zork I.........................	27.98	33.98	39.98
T266002	Zork II........................	27.98	33.98	39.98
T266003	Zork III.......................	27.98	33.98	39.98
T266004	Starcross......................	31.98	35.98	39.98
T266006	Suspended......................	31.98	35.98	39.98
T266022	Planetfall.....................	31.98	35.98	39.98
T266023	The Witness....................	31.98	35.98	39.98
T266024	Hitchhikers Guide To The Galaxy....	31.98	35.98	39.98

THE HULK

Adventure International/Commodore

Adventure International has been publishing the Scott Adams' Graphic Adventure Series for quite a while. Most of the titles have adhered to a fundamental format where compugamers assume a role and try to solve multiple riddles, uncover clues, and discover objects which help them attain their ultimate goal. This may be finding a treasure escaping a hostile environment, or preventing a disaster. Whatever the scenario, there's always been excitement, a sense of discovery, and the satisfaction derived from cracking a particularly tough conundrum.

Expanding beyond the normal subject boundaries somewhat, AI signed a deal with Marvel Comics. Working with the comic book heroes of the sixties and seventies, the SAGA series continues. Commodore licensed the products for their PLUS/4 and C-16 computers. The firstborn of this new venture is The Hulk, a simulation in which gamers think and act like the green skinned, much maligned and misunderstood monster.

A two word verb and noun command system is part and parcel of all SAGAs. Hitting the RETURN key without an entry switches the display between the graphics and text modes. As in most adventure games, keyboard entry is the only means of command. To quicken the pace, certain ones (N for North, for example) can be shortened to a single keystroke.

The goal is to amass points by collecting gems and storing them in a special area. While this may seem a little trite for an adventure program, the fun and excitement really stem from becoming the Hulk and wielding his incredible strength. After all, who hasn't grown up wishing they had the powers of their favorite comic book superhero?

AI has done a very good job with the visual portions. Mock action scenes (as in a comic book) help make up for the absence of true animation. The Hulk is exquisitely portrayed! Facial expressions, the torn and tattered clothing, they're all reproduced faithfully. The storyline doesn't detour too much from the premise of the printed version either. Unlike the television show, the human side of the creature is Bruce Banner, not David. This can be important for anyone wanting to get the true feeling of the pulp hero/villain.

Possibly because of social considerations the Hulk's character has changed. He's mellowed a bit. I remember him as a destructive sort of a rogue who only half understood humanity. Of course his visual aspects have changed with time, so perhaps the highly destructive nature of the beast was altered too. This revelation came to light when the program refused to let me flatten a particular item. After getting over the non-arcade format, this meekness was the biggest letdown.

The challenges presented in The Hulk are of a basic to intermediary class, therefore most adventurers will find the program challenging and stimulating. The yarn begins with Bruce Banner tied to a chair inside of a large geodesic dome. Naturally the restraints are too strong for the mild mannered scientist to overcome, so the Hulk must be aroused from within.

Gas attacks and high (body crushing) gravity are two of the early obstacles which need to be overcome. Logic, careful experimentation, and some risk taking are the key ingredients for success. One of the main features is a fuzzy area where space is distorted. The normal directional inputs don't work as they should. Though forewarned is forearmed, it will do you no good. The challenge remains.

Humor hasn't been left out. A brief appearance by the Chief Examiner (a Scott Adams cameo role) puts this role playing fantasy adventure back into its true perspective. Though the rest of the series will never appear, The Hulk is quite enjoyable in its own right. Top notch execution, adequate challenges, and a few surprises enhance its entertainment value.

Wait till you check out the fan. What sheer strength, what awesome power, what a way to fantasize the blues away. C'mon, get the green gleam!

STRANGE ODYSSEY

Scott Adams

With the release of Scott Adams' Strange Odyssey text adventure for their newest line of micros, Commodore has created a rather interesting combination: a marriage of new hardware with one of the oldest titles available for any personal computer. The Commodore 16/Plus/4 version of Strange Odyssey is essentially the same as the original program developed for the Apple II line in the late 1970's. (That's even before Monsieur Adams added hi-res pictures to the entire series, upgrading it to S.A.G.A. (Scott Adams Graphic Adventure) status.

This turn of events doésn't mean Strange Odyssey isn't a challenging, entertaining game. Considering the fact tht the Plus/4 or the 16 will most likely be someone's first computer, it doesn't matter one iota if the title has been around for four weeks or four years. As far as the novice computerist is concerned it's a new adventure.

Though some may argue that Strange Odyssey is behind

the times as far as text adventure development is concerned, this allegation is based on a false premise. So it doesn't have a 1600 word vocabulary and a parser capable of accepting multiple verb-noun statements simultaneously, a la Infocom games. Not many do, yet they still manage to provide numerous hours of enjoyment to the vast majority of electronic gamers. I know a sizeable number of players who disdain Infocom offerings precisely because they take so long to complete. These mavericks feel the continuity and pleasure associated with solving the dilemma fades long before the final move.

Now that the relative nature of everything in the universe has been explained, let's delve into the mysteries and wonders of Strange Odyssey itself. The scenario goes something like this: your spacecraft is down on a hostile alien planet, the craft's power crystal is weaker than a decades old ''D'' battery, and home's looking farther away every minute.

Gathering courage, you must venture forth into the foreboding terrain to gather the (five) objects needed to repair the ship and effect a safe trip home. Along the way you'll discover a transportaion portal, weather deadly methane ice storms and subdue a ferocious hellhound. (I can't resist dropping at east one hint, don't dawdle in the ice storm; it's too much like New York City, a nice place to visit, but. . .).

Though it contains only twenty three locations, completing Strange Odyssey is easier said than done. That's because the correct solution is a matter of sequential steps funelled through the portal. Some lead to dead ends (literally as well as figuratively!) while others practically guarantee success. With some common sense and a little practice you'll be able to determine the difference.

The brief manual enclosed with the cartridge is one of the most lucid ever written for a Commodore software release. That's becuse it's a direct lift of the Scott Adams Apple documentation that accompanied (and still does) the original version of the program. Besides startup instructions and a short blurb highlighting the heart and soul of adventure games, the manual explains the legal verb/noun syntax and even provides a few possibly useful verbs.

In any format Strange Odyssey proves itself a classic. It's an entertaining diversion that's still capable of providing exciting entertainment and fun filled evenings. Plus/4 and 16 owners, don't miss out on a good time and a bit of gaming history; add Strange Odyssey to your library today!

TELECOMMUNICATIONS

HARDARE and SOFTWARE

At the present time the only modem known to work with the Plus/4 computer is the model 1660 from Commodore. It comes in a white box labeled MODEM 300. Unfortunately, the software packaged with the modem does not run on the Plus/4 computer. If you contact Commodore customer support at 1-215-431-9100 They will provide you with a FREE copy of a terminal software program called Higgyterm. This is the only known terminal program which will run on the Plus/4. Tri Micro also has Higgyterm available (if you want to order from us) but we must charge for reproduction and handling.

One item that Commodore may or may not remember to mention is that the 1660 modem requires a simple modification to function properly. The modification requires cutting a single "wire" on the printed circuit board of the modem. All that is needed is an exacto knife or single edged razor blade or any similar small sharp blade which is easy to handle. After removing the modem from the package lay it down on a table with the BOTTOM of the modem facing UP and the printed circuit connector facing toward you. You will notice that a small section of the printed circuit board protrudes from the plastic housing covering the modem. It will probably be green in color. Near the center of this section of the printed circuit board you will see a short length of "wire" which is readily accessable. It is about 1/2 inch long and appears to be coated with silver. You must cut through this length of "wire" so that there is no longer a continuous path from left to right. You can do this by holding the modem firmly against the table and using the knife as a small saw to cut through the "wire" and into the surface of the printed circuit board itself. That"s all there is to it. It will take some force to cut the "wire" so please be careful.

NEED A PAL?

Like to find a PLUS 4 friend to share the joys and frustrations of computer awnership? Need another excuse to use your word processing skills? Just drop us a line with your next software order or membership renewal. We'll add your name to our Pen Pal listings and send you a selection of other Plus Exchange members interested in corresponding. We'll even try to locate a member from your own community.

SOFTWARE REVIEWS

In response to user requests for software reviews, we are starting a new section in the newsletter. This issue's reviews have been written by Tad Salamone, whose articles have appeared in Commodore Microcomputer, Power Play, RUN, COMPUTE's GAZETTE, and who is a regular contributing editor to INFO 64.

READING PROFESSOR

Increase / Build Reading Skills

When Commodore introduced the Plus/4 computer, it was targeted for a more business-like environment than either the Vic 20 or the 64. The ROM based software and the no-nonsense design said so in no uncertain terms. Heavy home use and/or small business applications were to be the mainstay of the latest member in Commodore's computer stable.

Within this framework, Commodore released The Reading Professor for Plus/4 owners interested in increasing their reading speed and improving their comprehension. While Reading Professor isn't exactly in the same vein as a spreadsheet or a word processing program, it does have all the makings of a productivity package. This type of program is considered one of the biggest growth areas in the entire software industry.

Contemporary business thought goes something like this. If you can dramatically improve your fundamental skills, you'll apply them and the resultant extra time to completing additional work. At the very least, you'll do a better job on the work currently at hand.

OVERALL CONTENTS

Reading Professor consists of a 40 page manual, two double sided floppies and a disk replacement/warranty card. The user manual is divided as follows: introduction, program startup procedures, lessons and an exercise tutorial. Reports generated and a list of appendices complete the litany.

Realizing that disks can be damaged or wear out, Commodore has made it both easy and inexpensive to replace defective units. Send $5.00, the completed return registration card, and the damaged disk to Commodore for a replacement. While not the ideal backup solution, this approach at least eases the pain incurred from the loss of a valuable program.

The disks contain an informative demo program, the interactive programs and vocabulary libraries consisting of 32 selections each. The reverse side of the Program disk contains Library A (High School level), the other disk contains Library B (College and Adult) and Library C (Professional). The levels differ in topic as well as general degree of reading difficulty.

INTERACTIVE LESSONS

Branching from the Main Menu you can enter the setup routine to alter the color of the background, regular, or highlighted text and passages. Upper case only display can also be selected. Once that's out of the way, would-be word wizards can work through a series of ten 20 minute lessons while the computer creates a profile for each individual. With this profiling feature, students can track their progress, all the way up to an incredible 2500 words per minute. At any time, the user can view his profile, complete a lesson or practice with the exercises.

These 10 lessons contain text, practice sessions and two timed reading/comprehension checks. Organized hierarchically, the lessons begin with faulty habit elimination (finger pointing, vocalizing, etc.), vision expansion (a continually widening span of words is displayed on-screen), and the eradication of regression (backward eye movement within passages).

A comprehension test follows every lesson or passage. These quizzes provide immediate feedback, a vital part of any well founded educational endeavor. This spontaneous acknowledgement is coupled with active involvement and reader interest sensitivity (a wide variety of user selectable readings) to provide the best of all possible worlds in one comprehensive package.

Next you are taught how to establish a rhythm pattern transferable to books and newspapers, etc., schooled in phrase recognition (as they're flashed on-screen), and introduced to paragraph structure for comprehension enhancement. The final lessons cover study skills, advanced visual expansion (recognition of larger areas of print) and the concept of skimming text versus speed reading. They are two altogether different beasts!

SKILL-BUILDING EXERCISES

Seven different exercises comprise The Reading Professor. These can be done independently of or in conjunction with the lessons already described. In Timed Reading you choose the material to be presented

as well as the justification, page height, width and spacing. Displayed one page at a time, the computer calculates your speed upon completion.

The Tachistoscope technique highlights words of phrases row by row so you can recognize more material per glance. Reading Professor's Ladders segment helps increase the viewer's peripheral vision by presenting a passage formatted on-screen in two columns. Concentrating on a dot moving downwards in the center of the screen, readers enhance their current abilities. Stretching is another form of peripheral vision enchancement in which letters are spread across the screen ever so briefly. Once gone you must correctly enter them via the keyboard.

Making use of the pyramidal format, the Scales routine presents passages in a top down method meant to also widen one's side vision. A technique called Phrases is then taught to increase comprehension. Four phrases are flashed on-screen followed by a four question comprehension check.

The final exercise is called Depths. This trains you to gather information from more than one line at a time. Two lines are displayed simultaneously; the key is to fixate on the space between them, effectively viewing both at once. Throughout the entire series of exercises users have the ability to alter the display according to the options listed under Timed Reading.

Just to keep you honest, The Reading Professor prepares a student profile consisting of the lesson or exercise performed, the passages used, the reading rate attained and a comprehension score or rate. An updated summary of these is provided each time you progress further in the program. This data can either be listed on-screen or sent to a suitably interfaced printer. The techniques used and reports generated are field tested and proven.

So whether you're just getting up to speed, or need to keep the skills tuned, The Reading Professor is the program for you. The passages are varied, the techniques are well established and presented. The manual is clear, concise and truly informative.

Now, how long did it take you to read this review?

IFR FLIGHT SIMULATOR

Flying on the Plus 4.

Academy Software's IFR Flight Simulator for the Plus/4 allows compugamers to take total control of a light plane similar to a Cessna 172RG. The screen depicts a working instrument panel consisting of compass, airspeed indicator, altimeter, fuel gauges, flaps and turn indicators, artificial horizon, and other navigational aids. It is an extremely realistic look. A combination of joystick functions and keyed input controls a variety of possible functions. Push the craft beyond its limits and it's curtains for all on board!

Failure to read the maps correctly or fully understand the instrumentation can cause dire consequences in the real-time flights between the program's four airports. Since IFR provides many of the challenges of actual flight, it has a longer than average learning curve. The pleasure derived makes the extra effort worthwhile. Since it is highly unlikely that Flight Simulator II or any MicroProse products will ever be released for the Plus/4, would be flyboys must be content with IFR. Luckily it is a first rate product capable of providing many hours of fun and enjoyment.

SOLO

Reprinted From Commodore Computing International July 1986

Still up in the air, we come to the last game in this batch--Solo from Bug-Byte. This one takes you outside the atmosphere in a battle against aliens. You control the fighter Solo and your task is to massacre the hordes of aliens who fling themselves at you.

At the start of the game you're sitting at the bottom of the screen, but don't stay there too long because the action is thick and fast and the second wave of enemies arrives before you've had a chance to dispense with the first lot. There are supposedly 10 levels but I should think you'd have to be a super hero to get through them all. There's no doubt about it, this game is merely an exercise for your trigger finger and reflexes, the nice thing about it is that it doesn't pretend to be anything else.

The graphics are pretty basic and variety is not one of the game's attributes. However, if what you want to do is spend an hour or so zapping away happily then you're sure to enjoy this.

THE FACES BEHIND THE NAMES

Maria Andrade -- As President of Tri Micro, I have duties beyond those demanded by the Plus Exchange. Since I work with some form of the software daily, I have usually encountered any problems you might have long before you ever discovered they were there. Doing my best with our new staff to cross-train them in this knowledge of operation of the machine and software. One request, please, do not call directory assistance for my home number when the office is closed and wake me up at 6:00 AM on Sunday morning.! (It really happened.)

Sharon Fullen -- Some of you may already have spoken with Sharon on the phone. Since Sharon has joined our organization, the order processing is much improved and the new systems she has helped establish have minimized errors. Always available to answer questions and take your orders, Sharon is still learning some of the more technical material. You can be certain, however, that if you give her a problem, it will be tracked down and resolved.

Allison Gibson -- The daughter of one of our members, Allison already owned a Plus 4 before joining our staff and is somewhat familiar with the problems you encounter. She has a love-hate relationship with her computer, an ambivalence probably shared by many of us when we first started computing. New to the organization, her initiative in handling questions and problems will get you an answer.

David Johnson -- Dave is co-founder and Chairman of Tri Micro, whose major responsibilities are in software development. The author of the built-in software on the Plus 4, he is also responsible for developing the product on the C-64, the C-128, and the Atari. Additionally, Dave has been working on enhancements for the Plus 4 and supervising other programmers. Occasionally, if a particularly technical question comes in, Dave is torn away from his systems to answer the question.

Richard (Dick) Ollins -- Vice-President of Tri Micro, Dick also has duties beyond those of the Plus Exchange, although the Exchange has become one of his major project. Dick has worked with the software extensively and can usually answer questions regarding any strange "things" you may be encountering. He has done the troubleshooting on the hardware and is the person to answer questions regarding modems, specific pin-out references, schematics, etc.

Various Support People and Programmers -- Some of these are employees of Tri Micro, others are independent contractors to Tri Micro. Their time is divided between various activities, of which one is Plus Exchange.

INPUT / OUTPUT

(Reverse video commands enclosed in brackets []).

Q. Something is wrong with the justification mode on my computer. When I use justify, I get big open spaces in the middle of the line before the last line. How can I correct this?

A. There is nothing wrong with the justify mode on your computer. To understand what is causing the problem, it is necessary first to understand the structure of the word processor. When counting margins in calculating space available for printing, the word processor begins counting at the first non-reverse video space it encounters. It assumes that the paper is standard 8 1/2 x 11 inch paper, therefore, it calculates margins within 80 horizontal spaces. When in justify mode, the program must calculate how many words can be processed within the space allocated considering the padding of blanks which is necessary to produce a flush right margin.

The word processor assumes that a RETURN (shown on the screen as a reverse video arrow) is the end of a line or a block of text. Whenever it sees a RETURN, it sends a carriage return and line feed. If it does not see the RETURN, it continues counting the blank spaces on the line as part of the 80-column paper line and will justify the last line of text as if those blank spaces were printable characters. The result is a justified last line with enormous blanks in the middle of the line. Examples of line formats which could cause this error:

```
[lmarg10;:rmarg70;:justify] (NO          RETURN)
This is an example of what                  not
to do.<--

This is an example of what not to do. (NO      RETURN)

This is an example of what not to do. (NO      RETURN)
(NO RETURN -- CURSORED DOWN                     A
LINE)
This is a new paragraph. (NO               RETURN)
```

By placing returns at the end of each line and to indicate a blank line, the output is changed to the following.

```
[lmarg10;:rmarg70;:justify]<--
This is an example of what not to do.<--

This is an example of what not to do.<--

This is an example of what not to do.<--
<--
This is a new paragraph. <--
```

The reverse arrows represent the carriage return and will not appear on the printout, however, the lines will all be spaced correctly as shown.

Q.   I prepare documents where I use the bold print mode frequently.   Is there an easier way to specify bold than having to type the [asc27;87;] each and every time?

A.   If you use reverse video commands often, there is a way to save keystrokes by using the search and replace command.   In those instances where you would normally type a reverse video ASCII command, simply use a special character, such as the # sign. After you have prepared the document, enter command mode, type re, and replace all instances of # with [asc27;nn;]. The search and replace command does work with reverse video and can be very handy for repetitive use of ascii printer codes.   The same technique can be used if you are using a particular word or phrase often, such as in script preparation. Simply prepare a table of symbols and their word or phrase equivalent before you begin the document.   Then search and replace all symbols with these equivalents and your document reads the way you want, with substantially less keystrokes and typing.

Q.   I have followed the instructions in the manual and am still having trouble working with the [linkfile] command.   I put the [linkfile] in reverse video followed by the name of the next file and they do no chain together during printing. What am I doing wrong?

A.   Unfortunately, the manual is not clear in specifying that the [linkfile] command must be the only command on a line.   Therefore, if your text runs over to line 99, you cannot put the [linkfile] command on that line.   If you are using the [linkfile] command, you should stop your text at line 98.   Then on line 99, by itself with nothing else on the line, type [linkfile'filename'].   The filename is the name of the file you want to link or chain, i.e., the next file you want printed.   The first text below is an example of a linkfile command which won't work.   The second example shows a proper linkfile command.

This linkfile will not work because it won't be the only text on the line. [linkfile'filename']

This linkfile will work because the text is continued to
[linkfile'filename']

You cannot combine any other reverse video command with linkfile on the same line. Therefore, if you are changing margins, putting a pagepause, or a nextpage, they must be on lines other than the line on which you place the linkfile.

Q.   Something is wrong with my file manager   disk. I know the records are there because I can find them when I do a search. When I try to access a record or review them, however, all I can ever see is one record. How can I get to my other records?

A.   Although the manual does not emphasize this element of the software, it is very important that you place the SEMI-COLON after any numerical reference in a file manager command.   The proper use for accessing a record is "rc5;" NOT "rc5". The proper use for reviewing a record is "rv5;" NOT "rv5". Although the number can vary depending on which record you want to access or from which record you want to begin the review, the SEMI-COLON must always be included.   If you do not include the semi-colon, the program will only take you to the last record accessed and go no further.

Q.   I was working with a file manager data file for weeks and encountered no problems. Suddenly, one day, my data was out of its proper format with the information from one field spread out into another and with blank records in the middle of my file? How can I correct this program "bug"?

A.   The problem you are describing normally results from working with various file manager disks without initializing the drive every time.   It is not a "bug" or "glitch".   The Commodore drive does not verify to see that a different data disk has been inserted in the drive, however, it remembers the format and contents of the prior data disk.

Therefore, each time you remove one file manager data disk and insert anotherone, you should type the "i" in command mode to initialize the new data disk.   If you don't, it is possible that some of your old data will write over the data disk now inserted in the drive, causing fields to fall out of format and wiping out the information in some records.

We could have solved the problem in software by forcing the drive to perform an "i" initialization every time you entered or updated a record. Due to the speed of the drive, however, we felt the solution was inefficient.   To avoid the problem, be sure and initialize any change in data disks witht the "i" command.

Q.   I am having trouble with formatting a file to produce mailing labels using the word processor and file manager. Do you have any suggestions for making this easier?

A.   A discussion of making labels was printed in newsletter #2.   I'll review the principles again for the benefit of those of you who have never seen the issue.   In designing a word processing file to print

mailing labels, you should become familiar with the papersize and pagelength commands. Papersize tells the program the size of the paper on which you are printing and is expressed in terms of how many lines can fit on the paper. Pagelength tells the program how many lines of text to process, and is the numerical equivalent of the number of carriage returns utilized in designing the label.

To determine the appropriate papersize, use the scale of 1 inch = 6 lines. In other words, if you are using one inch labels, the papersize command would be [papersize6;]; three inch labels require a command of [papersize18;], etc. The page length command, [pagelenNN;] computes the lines of text to be processed within the physical size defined by papersize before a form feed is given. To determine how many lines of text will be processed, remember that the system interprets a blank line with a RETURN or a line containing format commands with a RETURN as a line of text to be processed. For purposes of defining page length, a line can be thought of as a printed line of text or as any line with a carriage return. A typical example for producing a mailing label might be:

```
[tf:rc:papersize6;:pagelen4;:]<--
[fld1;] [fld2;]<--
[fld3;]<--
[fld4;] [fld5;]<--
[eof]
```

Notice that although only three lines of text will be printed (the lines where fields are positioned), the page length is actually set to 4. This is because a carriage return follows the format line. The pagelength must always be a minimum of one number less than the papersize. Other examples of labels are:

```
[rc10;:tf:rc:papersize6;:pagelen5;:]<--
[fld1;]<--
[fld2;]<--
[fld3;]<--
[fld7;]<--
[eof?]
```

```
[rc25;:tf:rc:papersize6;:pagelen5;:fld1;]<--
[fld2;]<--
[fld3;]<--
[fld4;]<--
[fld5;]<--
[eof?]
```

You can combine format commands and the field formats on the same line if you need to make room to print a five line label. You can also design a label to print multiple copies of the same thing. Use the following format as an example:

```
[tf:rc:lmarg3;:rmarg35;:papersize6;:pagelen4;:]<--
[center]PLUS EXTRA<--
[center]by<--
[center]David W. Johnson<--
[eof?]
```

Before printing this label, insert any file manager data disk into your drive. In command mode, type "tf" to access the file manager, and type "tf" again to initialize the data disk. Determine how many copies of the label you would like. Type "highrcNN;", where NN represents the number of copies you would like. For example, to get 50 copies of the label, type "highrc50;". Type "tw" to return to the word processor and begin printing labels. The word processor will think that it is reading records in the file manager disk and print the same label sequentially as many times as you have indicated. Since you did not specify any fields in reverse video, however, the only thing it will print over and over again is the actual text of the label itself.

The only limitation to the multiple copy application is the 99 line limitation for the word processing file since you cannot merge linked files with the file manager. You can even mix text with file manager data.

Q. *Is there any easier way to blank out a large portion of my spreadsheet without having to use the space bar in each and every cell? I sometimes have both formulas and the results entered which means for each cell, I must blank out the cell twice with the space bar.*

A. By using the copy command in conjunction with the LOGO Q function, you can more easily blank out a series of cells. First, go to the initial cell you want to blank. Be certain that neither numeric nor text data nor any formulas exist in the cell. Once the cell has been stripped of all values, press RETURN. Move to the next cell you want to blank. In command mode, type "copyr;c", with the r;c being the row and column coordinates of the blank cell. Press RETURN. Move to the next cell you want to blank and press the Commodore LOGO key (C=) and the Q key together. Continue using the LOGO Q at each cell you want to blank until you have finished the sequence.

Q. *I do not understand the use of logical expressions in the spreadsheet. What function do they serve?*

A. In sum, a logical expression can be used to test a result of a formula or a value in a cell. Based on the results of this test, you then perform another function in a secondary cell. For example, if the costs of an item are less than a certain value, you may want adjust your budget to increase savings.

Some software titles are already on the endangered species list, foremost among them Script Plus and Calc Plus. We were able to buy a supply of Script Plus from a liquidator once Commodore told us it had no more available for shipment, and are still looking for a backup source for Calc Plus. One of the software developers has contacted us offering his title for licensing, stating that Commodore released the program rights back to him and that he is free to market it as he sees fit. We are contacting the other vendors to see if the same is true in every case. If so, we will be able to manufacture the software ourselves under license from the programmer or software company which will assure that those titles continue to be available. We will let you know that status in the following newsletter.

We have already signed licensing agreements for some additional titles from Mexico and from the United Kingdom. We have included all titles on which we have production masters in the catalog accompanying this newsletter. Approximately 15 other titles have been licensed which have not been included as we are still awaiting production masters from the United Kingdom. Rather than get into a terrible backorder problem with the UK software, we will hold up announcement of the product until we have not only the licensing agreement but also control over production. The bulk of this software is game software, with a few serious titles such as accounting programs. You are free to call any time before your next issue arrives to find out if we have received the production masters. If so, we will be more than happy to describe the program to you and quote you a price should you want to order it early.

Our file of program submissions is beginning to grow. We are sending out licensing agreements to all persons who have submitted programs for publication and may have some of those titles available soon as well. They range from a stock market simulation to a utility which works with file manager files to allow columnar report printing. We have had repeated requests for a Print Shop type product and are seriously considering developing one in-house. WOULD YOU LIKE A PROGRAM FOR GREETING CARDS, BANNERS, ETC? Let us know so we can gauge whether it would be worth the programming effort or not.

The long-awaited "I BEFORE E" electronic spell-checker is finally debugged, documented, and available. We have shipped all back-orders against it and recommend it highly for those of you who work with the word processor frequently.

IS THERE COMPATIBLE HARDWARE?

JOYSTICKS -- Commodore has no more Plus 4 / Cl6 Joysticks to our knowledge. Our last shipment was imported from Taiwan. These have gone quickly and we have to order in minimum quantities of 1000 joysticks.

Delivery takes 8 weeks as they build them to order. We have tracked down a source of joystick adapter in the U.K. -- no prices or availability status as yet.

DISK DRIVES -- Some of you have called looking for alternatives to the 1541 drive. We offer a drive, called the Enhancer 2000, which is a faster drive with a more reliable mechanism. See the catalog for details.

CASSETTE RECORDERS -- Both the datasette for the Plus 4 / Cl6 are available from us, the model number being the 1531. Additionally, we have a source of datasette adapters which can be plugged into a standard cassette recorder to work with the Plus 4. See the catalog for details.

PRINTER INTERFACES -- These are used with non-Commodore printers. We know that CARDCO in Wichita, Kansas, sells their very popular printer interfaces directly to Plus 4 users. When you call them, be sure to specify that you want an interface with a Plus 4 / Cl6 connector. Their number is 316-267-6525. If you already have a printer interface or wish to purchase another manufacturer's interface, you can purchase the datasette adapters which will enable you to work with any printer interface. See the catalog for details on the adapter.

PRINTERS -- Non-Commodore printers can be used with the Plus 4 / Cl6 if they are properly interfaced. A good letter quality printer, the Commodore DPS-1101 is being liquidated by C.O.M.B. in Minneapolis, Minnesota, for $189.00. This printer has many printer functions, including bold, shadow, underline, variable printing pitch, etc. We have also had many recent inquiries regarding a tractor feed for the Commodore 803 printer. C.O.M.B. is selling these for $19.00. Their toll-free ordering number is 1-800-328-0609.

There is a "page creep" problem with Okimate 10 printers. The software available in the Plug n' Print module sends an extra carriage return, pushing your text in a long document further and further down the page. This problem exists with the C-64 and the C-128 as well. Okidata does have a "fix" for the problem. To obtain it, call 800 directory assistance and ask for the Okidata 800 customer support number for your area. They will send it to you.

MEMORY EXPANDERS -- Many of you new C-16 owners inquired as to the existence of the memory expansion cartridge for the C-16. It is available in the U.K.. However, when you convert the cost, add freight, and duty, you are probably better off buying a Plus 4.

At presstime, we received additional information from various sources of product. Although the growing lack of availability of Commodore software was previously referenced, the fact of the matter is that Commodore liquidated Plus 4's in the United Kingdom with 10 software programs bundled with each computer. We have called them and various liquidators to purchase Commodore Plus4 titles and they have very limited availability. Some of you report over the phone that Commodore has told you that they do have the software, however, we are not getting delivery of quite a few titles and neither are our usual sources of product. Just yesterday, we found a supply of 65,000 pieces of software, although not all titles were available.

Titles deleted from the price sheet (difficulty in obtaining delivery or inability to find source besides Commodore).

Experiences in Software (Tape)
Mindbenders (Tape)
Jack Attack (Cartridge)
Easy Match/Easy Count (Disk/Tape)
Starter Productivity Software (Tape)
Calc Plus (Cartridge)
Viduzzles (Cartridge)
Letter Match More or Less (Disk/Tape)

OUR SUGGESTIONS

Experiences in Software
Starter Productivity Software

REPLACEMENT: Purchase the Working C-16 /Plus 4 which contains same type of tape-compatible programs

Calc Plus

REPLACEMENT: Respond to Plus Extra Elite, explained below.

Upgrade to a disk drive

ENHANCER 2000 available Catalog.

If you choose not to upgrade to a disk drive, have patience!! We are expecting tape production masters from the U.K.

We will have more tape programs available within next 4 weeks. Call 800-number for availability.

!! LIMITED QUANTITY TITLES !!!

The titles listed below, although currently available in the quantities listed next to their name, are very limited in quantity based on our knowledge of existing supplies and our ability to purchase them. ORDERS WILL BE FILLED ON A FIRST COME, FIRST SERVE BASIS. Call 800-number for up-to-date availability quantities.

SCRIPT PLUS	25	PIRATE ADVENTURE	86
ATOMIC MISSION	150	STRANGE ODYSSEY	170
FINANCIAL ADVISOR	269	ZORK I	400

IF YOU HAVE BEEN LOOKING FOR SCRIPT PLUS OR CALC PLUS

TO OBTAIN EXPANDED DATA FILE SIZE, AND / OR FEATURES,

THE PRODUCT IS NOT AVAILABLE!

We have consulted David Johnson, author of the built-in software and the existing Plus Extra program which already enhances use of the software. Because Mr. Johnson is working on developing product for some of our other markets, we are hesitant to pull him off his current projects to develop a solution if the interest is not sufficient to justify our loss of income by delivering products into these markets later than we have projected. HOWEVER, if demand is sufficient enough, Mr. Johnson will take the 3-4 weeks necessary to write, restructure, and debug a new version of Plus Extra, called PLUS EXTRA ELITE on the price sheet. We will be aiming to produce a stand-alone word processor option with all current Plus Extra features and increased data file size between 250 and 299 lines with optional 40-column display. The spreadsheet option will aim for a 2 1/2 times to 3 times increase in usable cell size with

THERE WILL BE A 4-6 WEEK DELAY FOR DELIVERY FOLLOWING OUR EVALUATION OF ORDER DEMAND. IF THERE IS NOT SUFFICIENT DEMAND TO JUSTIFY DIVERTING MR. JOHNSON FROM HIS OTHER DEVELOPMENT PROJECTS, ALL MONIES REMITTED FOR PLUS EXTRA ELITE WILL BE REFUNDED THROUGH EITHER CHECK OR CREDIT CARD REVERSAL.

PIRATE ADVENTURE (T116004)CART
Travel from your London home to Treasure Island in this exciting high seas adventure. Can you recover Long John Silver's lost treasures while avoiding the perils that are lurking?

STRANGE ODYESSEY (T116006)CART
Now that you have landed safely, what perils await you on this dead planet? Your power supply crystal is expired, and you must obtain another to safely return home.

JACK ATTACK ALMANACK (T116002)CART
Jack attempts to smash a number of heads that are out to attack him. To do this, he utilizes a series of manuvers such as ''Headraulic Squash'' and ''Long Distance Squash.''

MINDBENDERS (T116009)TAPE
Push your problem solving skills to the limit with 8 tantalizing brain teasers. A truely challenging package that will provide you with hours of intense, enjoyable entertainment.

QUESTPROBE (THE HULK) (TC600)DISK
Control the intellect of Bruce Banner and the savage might of ol ''Jade-Jaws'' himself, the HULK. Your objective is twofold: to unlock the riddle of the Chief Examiner and...to survive!

VIDUZZLES (T116001)CART
Have fun building jigsaw puzzles on your computer screen...and never worry about losing the pieces! Team up with ''VID'', your cute little puzzle building companion, to race aginst the clock or compete aginst a friend.

INFOCOM ADVENTURE PACKAGES

CUTTHROATS (TC601)DISK
You're a backwater island's top diver and foremost expert on local shipwrecks. You are offered a business proposition to locate and salvage a fortune in sunken treasure. You stand to gain millions. The only drawback is, it could cost you your life.

PLANETFALL (T266022)DISK
''Join the Patrol, and see the Galaxy!'' You took the posters advice and went to the recruitment station. But after joining the closest you've come to Deep Space is scrubbing down the radioactive leper colony on Ishmael-3. However, your wishes are about to come true, but with hidden dangers attached.

STARCROSS (T266004)DISK
You are launched headlong into the year 2186 and the depths of space. Upon docking and entering a gargantuan starship, you encounter a microcosm of the galaxy, peopled with both harmful and helpful beings. The great starship bears a challenge that was issued eons ago, and only you can meet it.

SUSPECT (TC602)DISK
As a struggling journalist, you are used as a scapegoat and accused of murder. The evidence is stacked up aginst you and no one wants to help prove you're innocent. You're now an outcast an must rid yourself of the title of ''Killer'' on your own.

SUSPENDED (T266006)DISK
They said that you'd be in limited cryogenic suspension. Your mind would continue to operate overseeing maintenance of your planet's surface side equalibrium. You would not awake, until 500 years had elapsed, then and only then would you be awakened to save your planet by manipulating six robots.

WITNESS (T266023)DISK
Your a detective investigating a society dames death. It looks like a grifter is putting the screws to her rich old man. As you step in, the shakedown turns ugly. You're left with a stiff and a race aginst the clock to nail your suspect and you are the WITNESS!

ZORK I: GREAT UNDERGROUND EMPIRE (T266001)DISK
You plunge far below the surface of the earth in search of the Treasures of Zork. During your journey, you'll come face to face with creatures so outlandish, they defy description. You wander through a vast underground domain with many twists and turns offering you many surprises.

ZORK II: THE WIZARD OF FROBOZZ (T266002)DISK
As you explore the subterranean realm of Zork, you'll confront ''The Wizard'' who'll constantly endeavor to confound you with his capricious powers. But more than that, you'll face a challenge the likes of which you've never experienced before.

ZORK III: THE DUNGEON MASTER (T266003)DISK
You are drawn into the deepest and most mysterious reaches of the Great Underground Empire by the Dungeon Master, responisble for a world where nothing is as it seems. In this test of wisdom and courage, you will face countless dangers. But what awaits you at the end of your odessey is worth risking all.

****
PLUS/4 PROGRAMMERS REFERENCE GUIDE
****

This reference book is for programmers of all levels. Programmers of either BASIC or machine language will find the information they need to write programs for themselves or for commercial distribution. The authors have written and tested all the programs in the book. (Please note that the programs are copyrighted and cannot be used for commercial purposes.)

The book is divided into six chapters. The chapters cover BASIC, the built in software, programming techniques, machine language, graphics, and peripheral

devices. Memory maps and other technical information are covered in the appendices.

CHAPTER 1 -THE BASIC LANGUAGE

Provides complete descriptions of all 70+ commands, 36 functions, and the system variables that constitute BASIC 3.5. To simplify looking up BASIC keywords, the elements of BASIC 3.5 are presented in alphabetical order, with commands, functions, and system variables intermixed. For each keyword, the following information is given:

*The abbreviation (when there is one)
*A complete syntax so you can quickly review the order of parameters
*A description of all uses for the command or function
*An explanation and range of possible values for each parameter
*Examples

Graphics commands are given additional coverage in Chapter 4, PROGRAMMING GRAPHICS. Commands for controlling peripherals are also discussed in Chapter 6, USING PERIPHERAL DEVICES. Chapter 3, SOME PROGRAMMING TECHNIQUES, also provides more information on BASIC commands.

CHAPTER 2 -THE BUILT-IN SOFTWARE

This chapter is divided into four sections: word processor commands, commands for formatting printed output, spreadsheet commands (including graphics commands), and file manager commands. Examples are given where appropriate.

CHAPTER 3 -SOME PROGRAMMING TECHNIQUES

This is a collection of material on diverse programming topics. Both BASIC and machine language programming techniques are discussed. Sections include coverage of the following topics:

*Editing the screen
*Using the Escape key screen editing functions
*Using screen windows
*Using text strings
*Redefining the function keys
*Using mathematical functions
*Programming sound and music
*Using arrays
*Error handling

CHAPTER 4 -PROGRAMMING GRAPHICS

Explains the operations of the graphics modes in both BASIC and machine language. Color and screen control, drawing commands, and animation are among the topics discussed in this chapter. Many example programs are also provided.

CHAPTER 5 -MACHINE LANGUAGE ON THE PLUS/4

Explains the use of the built in monitor commands and the application of 6502 machine language programming on the Plus/4. This chapter does not teach machine language, but it does review the instruction set and describe the operating system for machine language programmers of all levels.

CHAPTER 6 -USING PERIPHERAL DEVICES

Describes the operations of the disk drive, cassette recorder, printers, modems, and joystick in BASIC and machine language. Each peripheral, and the commands that control it, are explained in a separate section. Particular attention is given to disk handling operations. Disk Operating System (DOS) error messages are explained in Appendix A.

The appendices are provided to explain additional technical information and to provide quick reference material. The six appendices cover error messages for BASIC and DOS errors, BASIC tokens, character string (CHR$) codes, ASCII codes, screen display codes, a musical note chart, and memory and register maps.

This Reference Guide also contains an extensive index that is designed to make finding information in this book quick and easy. We advise users to consult the index first when seeking specific information.

The Programmer's Reference Guide for the Commodore Plus/4 is presently being edited by the publishers. The expected printing and availability date is sometime in October. The publishers list price for the Guide is $19.95. However, we are making a special pre-publication offer to our readers for only $15.95 - a 20% discount !

ONLY $15.95 SPECIAL

CONVERTING C-64 PROGRAM LISTINGS TO PLUS 4 / C 16 PROGRAM LISTINGS

the majority of C-64 and even C-128 programs will not run on either the C-16 or the Plus 4. The C-128 is a super-set of the Plus 4 BASIC, making C-128 software written in BASIC more compatible with the C-16 and Plus 4 than the C-64. However, the fact remains that most programs listed in magazines and books, as well as public domain programs, are written for the C-64 and usually do not contain instructions on converting them to the C-16 or Plus 4. What is one to do?

The problem of compatibility with BASIC programs revolves around lines containing PEEK and POKE statements. These statements are usually followed by a numerical equivalent in the program listing. This number is like a street address -- the computer goes to that location. Since the locations differ between the C-64 and the Plus 4, unless these locations are converted to addresses that the Plus 4 map contains, the program will not run correctly.

The most commonly used locations are listed below. These should cover a majority of instances where you are trying to convert program listings. Both the decimal and HEX locations are provided for those of you who may be working in HEX. The 64 locations should be replaced with the equivalent Plus 4 location in the PEEK and POKE statements of the programs which you wish to convert.

Another difference is the color handling. To change a screen border color on the C-64, for example, you POKE the desired color number into location 53280. Background color is in location 53281 - 53284. The Plus 4 has its own COLOR commands. Replace all C-64 screen or background pokes into COLOR statements. The User's Guide which comes with your machine should give you the appropriate color instructions. NOTE: Delete any reverse video E's if you are working with a white background. The reverse video E's print letters in white.

64 label	decimal location	HEX location	PLUS/4 location
chrget	: 115-138	: $73-$8a	: 1139-1144
chrgot	: 121	: $79-	: 1145-1156
ldtnd	: 152	: $98	: 151
dfltn	: 153	: $99	: 152
dflto	: 154	: $9a	: 153
iopen	: 794,795	: $31a,$31b	: 792,793
iclose	: 796,797	: $31c,$31d	: 794,795
ichkin	: 798,799	: $31e,$31f	: 796,797
ichout	: 800,801	: $320,$321	: 798,799
iclrh	: 802,803	: $322,$323	: 800,801
ibasin	: 804,805	: $324,$325	: 802,803
ibsout	: 806,807	: $326,$327	: 804,805
istop	: 808,809	: $328,$329	: 806,807
igetin	: 810,811	: $32a,$32b	: 808,809
iclall	: 812,813	: $32c,$32d	: 810,811
usrcmd	: 814,815	: $32e,$32f	: 812,813
iload	: 816,817	: $330,$331	: 814,815
isave	: 818,819	: $332,$333	: 816,817
tbuffer	: 828-1019	: $33c-$36b	: 819-1010
ndx	: 198	: $c6	: 239
pnt	: 209,210	: $d1,$d2	: 200,201
crsw	: 208	: $d0	: 199
pntr	: 211	: $d3	: 202
user	: 243,244	: $f3,$f4	: 234,235
keyd	: 631-640	: $277-$280	: 1319-1328

If the program uses sprites, don't even try to convert the program listing. The Plus 4 and C16 have no sprite capability and there is no possible way to convert the sprites without having sufficient programming knowledge to write the graphics yourself. Although many gamesters criticize the lack the sprites in the Plus 4 and C16, the memory necessary to support the much stronger BASIC in the computers with the enhanced Graphics Commands and other improvements to the operating system were the trade-off for sprites.

The sound chip is also completely different in the Plus 4, so any program listings which rely heavily on sound effects and music are probably beyond the conversion attempts of beginning users. Machine language programs require much more of a conversion effort than BASIC programs and are beyond the scope of this article.

If you are truly industrious, buy both a C-64 programmers's reference guide and a Plus 4 programmer's reference guide for full comparison between the memory maps.

MONTEREY USER GROUP

PLUG, the Plus/4 Users Group, is a national organization devoted to support of the Plus 4 and the C/16. With more than 200 members spread across the U.S. and several foreign countries, if offers Plus 4 users a forum for the exchange of information and public domain software.

PLUG's chief activities are a newsletter and a public domain program library. Members participate in the newsletter by writing in to share what they have learned. Copies of the library disks can be ordered at $6.00 per disk. A smaller collection of library programs on tape is also available.

Membership costs $20.00 per year. To join, write to Calvin Demmon, president, PLUG, Box 1001, Monterey CA 93942.

Yet more on the Plus/4 for the insatiable readers of CCI and fans of the Cinderella machine. I have compiled the memory map of the PLUS/4 from a variety of sources and whereas most I have seen are inaccurate or so full of holes, they would qualify for a swiss cheese award, this cap is based on information to hand in early March 1986. I have used the Commodore lables for memory locations and would ask readers bear with me on the odd locations that have no explanation as to purpose. I will have these annotated

PLUS /4

after further research. A lot of location bit settings perform inthe same way as those onthe C64, so some familiarity with this machine's architecture will be of value. Note that C16 addresses will be functionally identical although please do not hold me to that since I do not have a C16. There is perhaps even more similarity with the C128, but beware that a lot of locations do not line up in terms of the map, although the functions will be identical. In the coming months I'll be looking at those locations that are either unusual or specific to the PLUS/4.

Label	Address Hex	Decimal	Description
PDIR	0000	0	8501 Data direction register
PORT	0001	1	8501 Input/Output register
SRCHTK	0002	2	Search for run-time stack token
ZPVEC1	0003-0004	3-4	line renumber vector
ZPVEC2	0005-0006	5-6	Line renumber vector
CHARAC	0007	7	search Character
ENDCHR	0008	8	Flag for quote at string end
TRMPOS	0009	9	Screen column number for last Tab
VERCK	000A	10	Flag for input/output load=0 verify=1
COUNT	000B	11	Pointer to input buffer or number of subscripts
DIMFLG	000C	12	Flag for default array
VALTYP	000D	13	Data type: $FF=string $00=numeric
INTFLG	000E	14	Data type: $80=integer $00=floating point
DORES	000F	15	Flag for data scan or list quote or garbage collect
SUBLFG	0010	16	Flag for subscript reference or user function call
INPFLG	0011	17	Flag for input read=$98 get=$40 input=$00
TANSGN	0012	18	Flag for tan sign or compare result
CHANNL	0013	19	Flag for input promt
LINNUM	0014-0015	20-21	Temporary location for integer values
TEMPPT	0016	22	Pointer to temporary string stack
LASTPT	0017-0018	23-24	previous temporary string address
TEMPST	0019-0021	25-33	Stack for temporary strings
INDEX1	0022-0023	34-35	First utility pointer area
INDEX2	0024-0025	36-37	Second utility pointer area
RESHO	0026	38	Start of floating point multiplication work area. These
RESMOH	0027	39	are used by BASIC multiply and divide routines. Also
RESMO	0028	40	used by routines that calculate the area size for
RESLO	0029	41	the memory area size for string array storage. They
RESLOH	002A	42	Are not meant to be interferred with.
TXTTAB	002B-002C	43-44	Start of BASIC pointer
VARTAB	002D-002E	45-46	start of BASIC variables
ARYTAB	002F-0030	47-48	Start of BASIC array
STREND	0031-0032	49-50	End of BASIC arrays + 1
FRETOP	0033-0034	51-52	Pointer to end of BASIC string storage
FRESPC	0035-0036	53-54	Utility string pointer
MEMSIZ	0037-0038	55-56	Pointer to end of Basic

Label	Address Hex	Decimal	Description
CURLIN	0039-003A	57-58	Current BASIC line number
TXTPTR	003B-003C	59-60	Pointer to BASIC work point
FNDPTR	003D-003E	61-62	Pointer to BASIC stack for cont command
DATLIN	003F-0040	63-64	Current line in data statemen
DATPTR	0041-0042	65-66	Pointer to current data item address
INPPTR	0043-0044	67-68	Vector for input routine
VARNAM	0045-0046	69-70	Current BASIC variable name
VARPNT	0047-0048	71-72	Pointer to current BASIC variable data
FORPNT	0049-004A	73-74	Pointer to index variable of BASIC for/next statement
OPPTR	004B-004C	75-76	Pointer to maths operation table displacement
OPMASK	004D	77	Mask for comparison operation
DEFPNT	004E-004F	78-79	Pointer for current BASIC (fn) descriptor
DSCPNT	0050-0052	80-82	Temporary pointer to current string descriptor
HELPER	0053	83	Help key flag
JMPER	0054	84	Jump to function instruction
SIZE	0055	85	Unknown at time of compilation
OLDOV	0056	86	Unknown at time of compilation
TEMPFI	0057	87	Miscell aneous numeric work area
HIGHDS	0058-0059	88-89	Pointer for block transfer of dim unit
HIGHTR	005A-005B	90-91	Pointer for block transfer
LOWDS	005C-005D	92-93	Pointer for block transfer of dim unit
LOWTR	005E-005F	94-95	Pointer for block transfer
EXPSGN	0060	96	Expont sign of number read $80 + negative
FACEXP	0061	97	Exponet in floating point accumulator No.1
FACHO	0062-0065	98-101	Mantissa in floating point accumulator No.1
FACSGN	0066	102	Sign in floating point accumulator No.1
SGNFLG	0067	103	Number of terms in a series evalution
BITS	0068	104	Overflow byte of floating point accumulator No.1
ARGEXP	0069	105	Exponent in floating point accumulator No.2
ARGHD	006A-0060	106-109	Mantissa in floating point accumulator No.2
ARGSGN	006E	110	Sign in floating point accumulator No.2
ARGHD	006F	111	Result of sign comparison between No.1 and No.2 FPA

Label	Address		Description
TO	00F1-00F2	241-242	Monitor zero page storage
CHRPTR	00F3	243	Unknown at time of compilation
BUFEND	00F4	244	Unknown at time of compilation
CHKSUM	00F5	245	Temporary location for checksum calculation
LENGTH	00F6	246	Unknown at time of compilation
PASS	00F7	247	Unknown at time of compilation
TYPE	00F8	248	Unknown at time of compilation
USEKDY	00F9	249	Unknown at time of compilation
XSTOP	00FA	250	Save .X register for quick STOP key test
CURBNK	00FB	251	Current bank configuration
XON	00FC	252	Character to send for RS232 x-on mode
XOFF	00FD	253	Character to send for RS232 x-off mode
SEDT2	00FE	254	Temporary use by screen editor
LOFBUF	00FF	255	Unknown at time of compilation
FBUFR	0100-010F	256-271	Unknown at time of compilation
SAVEA	0110	272	Temporary location for
SAVEY	0111	273	save and
SAVE Page	0112 1	274	restore
COLKEY	0113-0122	275-290	Colour/luminance table in RAM
SYSSTK	0124-01FF	291-511	System Stack
BUF	0200-0258	512-600	BASIC line editor input buffer
OLDLIN	0259-025A	601-602	BASIC storage
OLDTXT	025B-025C	603-604	BASIC storage
XCNT	025D	605	DOS loop counter
FNBUFR	025E-026D	606-621	Buffer for 1st filename
.DOS	026E	622	Lenght of 1st filename 0-1
DOSD1	026F	623	Device number of 1st drive
DOS1	0270-0271	624-625	Address of 1st filename
DOSF2L	0272	626	Length of 2nd filename
DOSDS2	0273	627	Device number of 2nd drive
DOSF2A	0274-0275	628-629	Address of 2nd filename
DOSLA	0276	630	DOS logical address
DOSFA	0277	631	DOS physical address
DOSSA	0278	632	DOS secondary address
DOSDID	0279-027A	633-634	Current disk ID
DIDCHK	027B	635	Flag for disk ID
DOSSTR	027C	636	DOS output string buffer
DOSSPC	027D-02AC	637-684	Buffer for generating DOS output strings
XPOS	02AD-02AE	685-686	Graphic variable current X position
YPOS	02AF-02B0	687-688	Graphic variable current Y position
XDEST	02B1-02B2	689-690	Graphic variable destination direction X-co-ordinate
YDEST	02B3-02B4	691-692	Graphic variable destination direction Y-co-ordinate
XABS	02B5-02B6	693-694	X/Y absolute for graphic lines X-absolute
YABS	02B7-02B8	695-696	X/Y absolute for graphic lines Y-absolute
XSGN	02B9-02BA	697-698	X/Y sign number X-sign
YSGN	02BB-02BC	699-700	X/Y sign number Y-sign
FCT1	02BD-02C0	701-704	Graphic lines factor variable
ERRVAL	02C1-02C2	705-706	Error value
LESSER	02C3	707	Smaller marker
GREATR	02C4	708	Larger marker
ANGSGN	02C5	709	Sign of angle
SINVAL	02C6-02C7	710-711	Sine of the angle value
COSVAL	02C8-02C9	712-713	Cosine of the angle value
ANGCNT	02CA-02CB	714-715	Angle distance

The following 24 bytes are used for a variety of purposes. They are termed the 'multiply defined area' and the area is numbered from 1 to 5 depending on use.

Multipy defined area No.1 — PRINT USING Work Area.

Label	Address		Description
PHLDER	02CC	716	Placeholder
BNR	02CD	717	Pointer to starting number
ENR	02CE	718	Pointer to finishing number
DOLR	02CF	719	Flag for dollar sign
FLAG	02D0	720	Flag for comma
SWE	02D1	721	Counter
USGN	02D2	722	Sign exponent
UEXP	02D3	723	Pointer to exponent
VN	02D4	724	Number of digits before the decimal point
CHSN	02D5	725	Justify flag
VF	02D6	726	Number of places before the decimal point
NF	02D7	727	Number of places after the decimal point
PDSP	02D8	728	Flag for +/−
FESP	02D9	729	Flag for exponent
ETDF	02DA	730	Switch
CFORM	02DB	731	Character counter
SNO	02DC	732	Sign number
BLFD	02DD	733	Flag for blank/star
BEGFD	02DE	734	Pointer to beginning of the field
LFOR	02DF	735	Lenght of format
ENDFD	02E0	736	Pointer to end of the field

Multiply defined area No.2 — Grahpics general purpose work area

Label	Address		Description
XCENTR	02CC-02CD	716-717	Centre for X co-ordinate
YCENTR	02CE-02CF	718-719	Centre for Y co-ordinate
XDIST1	02D0-02D1	720-721	Distance 1 for X co-ordinate
YDIST1	02D2-02D3	722-723	Distance 1 for Y co-ordinate
XDIST2	02D4-02D5	724-725	Distance 2 for X co-ordinate
YDIST2	02D6-02D7	726-727	Distance 2 for Y co-ordinate
ENDIST	02D8-02D9	728-729	End of co-ordinate distance
COLCNT	02DA	730	Column counter for characters
ROWCNT	02DB	731	Row counter for characters
STRCNT	02DC	732	Lenght counter for string

Multiply defined area No.3 — Graphic rectangle routines work area

Label	Address		Description
XCORD1	02CC-02CD	716-717	X co-ordinate
YCORD1	02DE-02CF	718-719	Y co-ordinate
BOXANG	02D0-02D1	720-721	Rotation angle
XCOUNT	02D2-02D3	722-723	Counter for X value
YCOUNT	02D4-02D5	724-725	Counter for Y valLUE
BXLENG	02D6-02D7	726-727	Lenght of a side of the rectangle
XCORD2	02D9-02D9	728-729	X co-ordinate
YCORD2	02DA-02DB	730-731	Y cp-ordinate

Multiply defined area No.4 — Graphic circle routines work area

Label	Address		Description
XCIRCL	02CC-02CD	716-717	Centre for X co-ordinate of circle centre
YCIRCL	02CE-02CD	718-719	Centre for Y co-ordinate of circle centre
XRADUS	02D0-02D1	720-721	X radius
YRADUS	02D2-02D3	722-723	Y radius
ROTANG	02D4-02D7	724-727	Rotation angle
ANGBEG	02D8-02D9	728-729	Start of arc angle
ANGEND	02DA-02DB	730-731	Finish of arc angle
XRCOS	02DC-02DD	732-733	X-radius * COS (rotation angle)
YRSIN	02DE-02DF	734-735	Y-radius * SIN (rotation angle)
XRSIN	02E0-02E1	736-737	X-radius * SIN (rotation angle)
YRCOS	02E2-02E3	738-739	Y-radius * COS (rotation angle)

More next month folks!

Label	Address		Description
FACOV	0070	112	Low order mantissa byte of FPA No.1 for rounding
FBUFPT	0071-0072	113-114	Series evaluation Pointer
AUTINC	0073-0074	115-116	Increment value for auto line numbering $00+ off
MVDFLG	0075	117	Flag when allocation of 10k hires graphic area made
KEYNUM	0076	118	Miscelleneos work values
KEVSIZ	0077	119	Miscelleneous work values
SVNTMP	0078	120	Temporary Location for indirect loads
DSDESC	0079-0078	121-123	Descriptor for ds$
TOS	007C-007D	124-125	Top of runtime stack
TMPTON	007E-007F	126-127	Temporary location used by sound tone and volume
VOINO	0080	128	Sound channel number
RUNMOD	0081	129	Flag for run or direct mode
POINT	0082	130	Using Pointer for decimal mode or status of DOS parser
GRAPHM	0083	131	Current graphic mode
COLSEL	0084	132	Current colour selected
MC1	0085	133	Multicolour 1
FG	0086	134	Foreground colour
SCXMAX	0087	135	Maximum number of columns
SCYMAX	0088	136	Maximum number of rows
LTFLAG	0089	137	Flag for paint left
RTFLAG	008A	138	Flag for paint right
STOPNB	0088	139	Halt painting if backgrond colour not the same
GRAPNT	008C-008D	140-141	Pointer to graphics area
VTEMP1	008E	142	Temporary storage for graphics routines
VTEMP2	008F	143	Temporary storage for graphics routines
STATUS	0090	144	Kernal i/o status word value
STKEV	0091	145	Flag for STOP key pressed
SPVERR	0092	146	Temporary storage for key verification
VERFCK	0093	147	Flag for load routine 0+load 1+verify
C3PO	0094	148	Flag for seial bus buffered oupt character
BSOUR	0095	149	Buffered character for serial bus
YSAV	0096	150	Temporary .v register save area
SCXMAX	0087	135	Maximum number of columns
SCYMAX	0088	136	Maximum number of rows
LTFLAG	0089	137	Flag for paint left
RTFLAG	008A	138	Flag for paint right
STOPNB	008B	139	Halt painting if background colour not the same
GRAPNT	008C-008D	140-141	pointer to graphics area
VTEMP1	008E	142	Temporary storage for graphics routines
VTEMP2	008F	143	Temporary storage for graphics routines
STATUS	0090	144	Kernal i/o status word value
STKEY	0091	145	Flag for STOP/key pressed
SPVERR	0092	146	Temporary storage FORE/key verification
VERFCK	0093	147	Flag for load routine 0=load 1=verify
C3P0	0094	148	Flag for serial bus buffered oupt character
BSOUR	0095	149	Buffered character for serial bus
YSAV	0096	150	Temporary. Y register save area
LDTND	0097	151	Number of open files or index to end-of-file tables
DFLTN	0098	152	Default input device 0=keyboard
DFLTO	0099	153	Default output device 3=screen
MSGFLG	009A	154	Flag for kernal message control $80=direct $00=program
PTR1	009B	155	Error log index for first tape pass
PTR2	009C	156	Error log index for second tape pass
EAL	009D	157	Pointer to end address of load
EAH	009E	158	Pointer to end address of load
T1	009F-00A0	159-160	Temporary data area
T2	00A1-00A2	161-162	Temporary data area
TIME	00A3-00A5	163-165	Software jiffy clock
R2D2	00A6	166	Flag for serial bus bit count and end of input
TPBYTE	00A7	167	Byte tob e written/read on/off the tape
BSOUR1	00A8	168	Temporary use by serial bus cycle count '
FPVERR	00A9	169	Temporary colour vector
DCOUNT	00AA	170	Tape write bit counter
FNLEN	00AB	171	Lenghth of the current filename
LA	00AC	172	Current logical file number
SA	00AD	173	Current secondary address
FA	00AE	174	Current decive number
FNADR	00AF-00B0	175-176	Pointer to current filename
ERRSUM	00B1	177	Tape error count
STAL	00B2	178	I/O start address
STAH	00B3	179	I/O start address
MEMUSS	00B4-00B5	180-181	Tape load temporary addresses
TAPEBS	00B6-00B7	182-183	Base pointer to cassette base
TMP2	00B8-00B9	184-185	Miscellaneous pointers
WRBASE	00BA-80BB	186-187	Pointer to data for tape writes
IMPARM	00BC-00BD	188-189	Pointer to immediate string for primms
FETPTR	00BE-00BF	190-191	Pointer to byte to be fetched in bank-switching routine
SEDSAL	00C0-00C1	192-193	Temporary location for screen scrolling
RVS	00C2	194	Flag for print reverse characters 0=off
INDX	00C3	195	Pointer to end of logical line for input
LXSP	00C4-00C5	196-197	Cursor X, Y position at start of point
SFDX	00C6	198	Matrix co-ordinate of current key pressed
CRSW	00C7	199	Flag for input from keyboard or screen
PNT	00C8-00C9	200-201	Pointer to the address of current screen line
PNTR	00CA	202	Cursor column on current line
QTSW	00CB	203	Flag for editor in quote mode 0=no
SEDT1	00CC	204	Temporary use by editor
TBLX	00CD	205	Current cursor physical line number
DATAX	00CE	206	Temporary storage ASCII value of last printed character
INSRT	00CF	207	Flag insert mode, no. greater than 0 is no., of inserts
FREKZP	00D0-00EB	208-232	Free zero page area for user
CIRCEG	00E9	233	Screen line link table
USER	00EA-00EB	234-235	Pointer to address of current screen colour location
KEYTAB	00EC-00ED	236-237	Vector for keyboard decode table
TMPKEY	00EE	238	Temporary use for keyboard decoder
NDX	00EF	239	Number of characters in kevboard buffer
STPFLG	00F0	240	Pause flag

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